

Future State of Utah Communications Services

DTS plans to deploy a next generation network and services over the next several years. An RFP will be issued later this year to obtain the necessary resources to make this happen. As part of development and award of the RFP, DTS is working with state agencies to identify which of the many potential new services are the most desirable. With this as an introduction, let's cover some of the basic concepts involved, and what new capabilities will be available with this new technology.

Voice over Internet Protocol (VoIP, Voice over IP)

VoIP is an acronym for Voice over Internet Protocol, or in more common terms phone service over a data network (like the Internet). VoIP is a general term for a family of methodologies and communication protocols, for delivery of voice communications over Internet Protocol (IP). Other terms frequently encountered and synonymous with VoIP are *IP telephony*, *Internet telephony*, *voice over broadband (VoBB)*, *broadband telephony*, and *broadband phone*.

If you have a reasonable quality data connection you can get phone service delivered through this connection instead of from your local phone company (They sell Public Switched Telephone Network services PSTN).

There are VoIP providers out there that offer these services, but there is not a consistent industry-wide means of offering them. Internet telephony refers to communications services — voice, facsimile, and/or voice-messaging applications — that are transported via the Internet, rather than the public switched telephone network (PSTN). The basic steps involved in originating an Internet telephone call are conversion of the analog voice signal to digital format and compression/translation of the signal into Internet Protocol (IP) packets for transmission over the Internet; the process is reversed at the receiving end.

VoIP systems employ session control protocol (SIP) to control the set-up and tear-down of calls as well as audio codec's which encode speech allowing transmission over an IP network as digital audio.

Unified Communications

Unified Communications is the convergence of six communications product areas. It allow multiple different kinds of communications to be interconnected. This convergence is part of the evolution of IT and telecom into one common set of features and functions, not a brand new, just emerging concept.

The six areas are:

1. The evolution of the PBX into the IP Telephone system
2. The development of the soft phone (software that runs on a PC that simulates a telephone) as part of the IP PBX
3. Integration of voice mail and e-mail into what is called "Unified Messaging"

4. Changing the e-mail function to a desktop management tool
- 5 .Multiple forms of conferencing such as web, voice, and video
6. Instant messaging services and capabilities.

In order to maximize the benefits of Unified Communications to our state employees, there needs to be close integration of contact application software with the IP enabled network. Most experts in this area agree that the future of contact management will be based on Session Initiation Protocol (SIP). Applications that form part of the UC platform should be able to utilize this protocol.

Potential Business Applications of Unified Communications

IP Core Telephony:

Centralized Services-These are network-based services that will reside on computers in the State's data center(s). This can dramatically reduce the number of systems, management complexity, and operating costs.

Tele-working, remote users- Users can access full UC functionality anywhere with network connectivity. Hardware Virtual Private Networks (VPN) and IP phones can be used for formal full-time remote workers (i.e., contact center agents, remote knowledge workers). Soft-phone and/or single-number-reach for ad-hoc tele-workers (sick day, bad weather, facility closure). Attract and/or retain key staff, support "Green" initiatives, pseudo-furlough days.

Single-Number-Reach- Calls to desk number simultaneously ring up to 4 other devices, ring-no-answer forwards to voicemail box, and easy transfer from desk to mobile phone when reaching or leaving the office. SNR can be tied to work schedule so no business calls on cell phone after-hours, weekends, and holidays. This enhances reach-ability without publishing personal cell phone number. This can reduce cell minutes by transferring cell to desk phone when in the office. The ability could be valuable to: mobile workers, execs, knowledge workers, case workers, fleet workers, public works drivers.

Soft-phone- This is an IP Communicator running on the PC, and can be used by formal and casual remote workers. It's a communication tool that can support "Essential Services" as part of State's Continuation of Operations plan (natural or man-made disaster, pandemic planning, etc.).

Desktop Video-telephony- This can video enable the phone system, allowing the use of a PC webcam or next-generation IP videophone. This could allow someone to make a phone call and video appears on the PC monitor or video telephone display. In the future this could be an easy-to-use, cost-effective, and good video quality system for small groups. Executive conversations, management team meetings, and geographically dispersed work group interaction could take place. This is supported by a soft-phone, which enhances tele-working or COOP with video communications.

Presence, Instant Messaging- Federated presence services to both the IP phone and the PC desktop. Presence-enable IP phone directories and call logs so users know if someone is unavailable before attempting to call them. This can allow enterprise-class Instant Messaging. It can create a common presence across phone and PC environments, as well as external “buddies” on AOL, Google Talk, etc..

Directory Integration- Access corporate directory and dial from IP phone. This can be faster and more up-to-date than printed directories.

Mobile Phone Clients- Mobile client extends the enterprise phone system to cell phones with directory integration, presence status, call logs, visual voicemail, secure SMS, dial-via-office, and single-click conferencing integration. These systems support Blackberry, iPhone, Symbian, and Windows Mobile devices. There can be tight cell phone integration for highly mobile “power users”.

Click-to-Call- Click-to-call from PC applications. Get On-line directory, web pages, Office documents, etc. This can enhance productivity, especially for heavy phone users.

Emergency Responder- Enhanced 911 location services with minimal system administration.

Intercompany Media Engine- Voice/video calls over State backbone with minimal system administration/configuration and dial plan impact.

Voice Messaging:

Integrated Messaging- IMAP integration allows users to see and hear their voicemails in their e-mail inbox. This allows for faster, more intuitive management of voicemails.

Visual Voicemail- Manage voicemails visually thru the IP phone display. View the list of voicemails, listen, save, forward, delete, and manage greetings, etc. This provides a much more intuitive visual interface than traditional audio-based interface.

Speech Commands- Manage voicemails by speaking voicemail password, commands such as play, save, reply, and delete, and voice dialing. This can be especially beneficial for mobile users accessing the system via cell phone.

“Alternate Number”- Simple voicemail feature that recognizes a caller’s number and takes them directly into their voicemail box. Mobile users just need to enter their voicemail PIN (or speak it), instead of first entering their extension and then their PIN.

Videoconferencing:

Desktop Video-telephony, Room-Based Systems, Tele-presence- Some UC systems support many modes of videoconferencing: desktop video-telephony, room-based IP systems, and HD Tele-presence systems. These systems can allow interoperability between all of these modes. State applications for videoconferencing could include enhanced executive collaboration, COOP and emergency preparedness, tele-working, dispersed working groups and task forces, Tele-Health initiatives, and training.

Contact Center:

Internal Help Desks- Internal help desks typically include IT, benefits, HR, etc., and many of these may be replicated in departments and locations across the State. An IP-based Contact Center can allow these help desks to be consolidated without geographical constraints, and to share/load-balance agents among groups that perform similar tasks or where cross-training is practical.

Constituent Services- Highly-scalable, geographically-dispersed IP contact centers for Unemployment offices, Human Services, Transportation, etc. to handle recent increased call volumes. These systems can enable web interactions such as chat, e-mail, and call-back services.

Self-Service- Voice Portal is a highly-scalable Interactive Voice Response system with distributed IP architecture that can provide “front-end self-service” for both internal help desks and constituent-facing call centers. Self-service reduces the call volume into the contact center and can greatly increase constituent satisfaction.

Other Applications:

Conferencing, Collaboration- Audio, Web, and Video conferencing, desktop sharing, and collaboration can be achieved with these systems. Richer communication and collaboration in dispersed work groups, live/recorded employee training and Executive webcasts, and constituent information.

Broadcast Messaging- Deliver prerecorded or ad-hoc messages in both audio and text format. Highly-reliable and rapid broadcast of messages for weather emergencies, incident response, disaster alerts, and facility closures. These systems can be integrated with Homeland Security, National Weather Service, and Amber Alert systems. Can also integrate with third-parties for mass notification services (phone, email, SMS, etc.)

Radio Interoperability- Radio over IP enables interoperable communications between disparate radio systems and a phone system. Radio System A can interoperate with Radio System B. Both systems can communicate with an IP phone, PC client, and/or cell phone. Some of these systems are being used to extend the useful life of existing radio systems (delay huge capital expense of radio replacement), while providing enhanced radio and phone system interoperability desired by law enforcement, security personnel, fleet workers, and executives.